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Dated: July 11, 2006

Signature:

(Christine M. Holmes)

Docket No.: 1235_001
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Ramon M. Velez, Jr.

Application No.: 10/747,720

Confirmation No.: 5879

Filed: December 29, 2003

Art Unit: 1746

For: HIGH PRESSURE INTERNAL CLEANING
METHOD AND APPARATUS

Examiner: Z. El Arini

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on July 10, 2006, and is in furtherance of said Notice of Appeal.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1206:

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|-------|---|
| I. | Real Party In Interest |
| II. | Related Appeals, Interferences and Judicial Proceedings |
| III. | Status of Claims |
| IV. | Status of Amendments |
| V. | Summary of Claimed Subject Matter |
| VI. | Grounds of Rejection to be Reviewed on Appeal |
| VII. | Argument |
| VIII. | Conclusion |

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

United Technologies Corporation, the Assignee of the subject invention.

II. RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in the Application

There are 20 claims pending in the application.

B. Current Status of Claims

Claims withdrawn from consideration but not canceled: 1-10

C. Claims On Appeal

The claims on appeal are claims 11-20.

IV. STATUS OF AMENDMENTS

Applicant did not file an Amendment after Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to a method of simultaneously flushing the inner surfaces of a plurality of cavities in each of a plurality of parts with each part having at least a pair of openings and associated internal cavities by installing the parts into a holder, providing a guide member having passages that are aligned with the respective part openings, providing a manifold with a plurality of probes registering with the respective guide member passages, advancing the manifold and probes such that the probes pass through the respective passages and into the respective internal cavities, and causing high pressure fluid to flow through the probes and into the cavities to flush out foreign matter therefrom. In this way, multiple cavities in each of multiple blades can be simultaneously flushed in a single process.

Concise explanations of the subject matter defined in claims 11, 14 and 15 are as follows:

Claim 11

11. (Currently Amended) A method of simultaneously flushing the inner surfaces of a plurality of cavities in each of a plurality of parts comprising the steps of:

installing a plurality of parts into a holder in spaced apart relationship in a first plane (page 3, paragraphs 16 and 17, lines 22-27; Figure 2, reference numbers 39, 41 and 42), with each part having at least a pair of openings (page 3, paragraph 12, lines 1-3; Figure 1, reference numbers 24, 26 and 27) and associated internal cavities (page 3, paragraph 12, lines 3 and 4; Figure 1, reference numbers 19, 21 and 22) spaced apart in a plane other than said first plane;

providing a guide member near said part openings (page 3, paragraph 17, lines 26 and 27; Figure 2, reference number 43) said guide member having a plurality of passages formed therein, including adjacent passages that are in a common plane parallel to said first plane and including adjacent passages that are in a common plane other than said first plane and wherein each of said passages has an axis aligned in coincidence with a respective part opening (pages 3 and 4, paragraph 17, lines 27-31 and 1-2; Figure 2, reference numbers 44, 46, 47, 48, 49 and 51);

providing a manifold opposite said holder member (page 3, paragraph 18, lines 3-5; Figure 1, reference number 52) with said manifold having a source of high pressure fluid connected thereto (page 5, paragraph 21, lines 7-9; Figure 2, reference number 67) and having a plurality of probes extending therefrom with each of said passages having an axis aligned coincident with a respective probe tube axis (page 5, paragraph 21, lines 5-7; Figure 2, reference numbers 54, 56, 57, 58, 59 and 61);

advancing said manifold and said plurality of ~~tubular~~ probes along the axes of said probes such that said probes pass through the respective passages and into respective internal cavities (page 5, paragraph 21, lines 5-7; Figure 2, reference numbers 54-61 and 44-51); and

causing high pressure fluid to flow through said probes and into said cavities to flush out any foreign matter that may reside on the inner surfaces thereof (page 5, paragraph 21, lines 7-9; Figure 2, reference number 67 and Figure 1, reference numbers 21 and 22 and unnumbered internal surface).

Claim 14

14. (Original) A method as set forth in claim 11 wherein some of said probes are of different lengths (page 4, paragraph 21, lines 20-22).

Claim 15

15. (Currently Amended) A method as set forth in claim 13 wherein, with ~~the same~~ any part the tubular probes being advanced thereinto are of different lengths (page 4, paragraph 20, lines 20-22).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Ground 1

Claims 11-20 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Buongiorno (5,679,174) in combination with Swanick (1,492,905) or Kenton et al. (5,464,479).

VII. ARGUMENT

According to the MPEP 2143, three basic criteria must be met to establish a prima facie case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. All of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, MPEP 2143.03. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438

(Fed. Cir. 1991). We believe that the Examiner has not met the basic requirements for establishing a prima facie case of obviousness.

Ground 1

Rejection of Claims 11-20 as being unpatentable over Buongiorno in view of Swanick or Kenton et al.

The Buongiorno patent shows a process and apparatus for cleaning deposits from gas turbine engines by locating or drilling a single hole into the cavity of the component, inserting a cleaning tube into the cavity and cleaning the deposits from the cavity with a high pressure water stream.

In an alternative Fig. 2 embodiment, the stationary platform 24 is located within a chamber 10 and a component is mounted to a holding fixture that is in turn mounted to the platform 24. A cleaning tube 21 is then advanced, by way of an input shaft 22, into the hole in the component for cleaning. It will thus be seen that the Buongiorno reference shows only a single probe being advanced into a single hole in a single blade.

The Swanick reference shows a method and apparatus for unloading high explosive shells. A trough 1 which includes a plurality of upstanding vertical tubular shell guides 2 has permanently installed therein a steam supply pipe 3 with individual nozzles 4 extending into the respective shell guides 2. The shells, having a relatively large opening in their point are inserted into the shell guides 2 such that the nozzles pass through the opening and into the area of the charge. Steam is then caused to flow through the supply pipe, into the nozzles and out a plurality of apertures to cause the charge to be washed out of the shell and flow with the water down through the opening at the point of the shell. This is substantially different from the applicant's invention wherein the parts each have a plurality of openings and cavities therein, the parts are held in place while the probes are advanced first through the guide member, and then through the plurality of openings in the parts to reach the plurality of apertures.

The Kenton et al. reference shows a method for removing undesired material from internal spaces of turbine blade by first immersing the blades in water and allowing

more water to be absorbed by the material, freezing the combination such that the material is broken up, and then using pressurized water to flush out the shattered material. The flushing is accomplished by attaching a pump to the plurality of blades by a plurality of hoses to thereby pump water into the internal cavities. This would appear to be a rather labor intensive approach that requires the attachments of individual hoses to the individual blades rather than simply advancing the plurality of probes as in the present invention. Further, the Kenton et al. approach would not have the advantage of specifically directing the liquid flow to particular cavity locations as is the case with the probes of the present invention.

In respect to the Buongiorno reference, the applicants agree with the Examiner that the reference does not show or suggest the installing of a plurality of parts into a holder, providing a guide member, or providing a manifold as claimed by the applicants. The applicants, however, do not agree that the reference discloses all other limitations. In particular, it does not show or suggest the step of inserting a plurality of probes into each of a plurality of parts.

In respect to the Swanick reference, the applicants believe that it is non-analogous art and should therefore not be considered as prior art to be obviously combined with the features of the Buongiorno reference as suggested by the Examiner. That is, for the purpose of improving its manufacturing processes, one skilled in the art of the manufacture of turbine blades is not likely to look to a 1924 patent that shows a method and apparatus for unloading high explosive shells.

Assuming arguendo, that the Swanick reference is analogous art, and further that features of the Swanick reference were incorporated in the Buongiorno method, it would not result in the applicant's invention. The teachings of Swanick of providing permanently installed multiple probes would not obviously lead one to adapt the Buongiorno reference to include a plurality of advanceable probes into a plurality of blades. Further, there is clearly no showing or suggestion by either of the references to provide a plurality of probes that are advanced into each of the parts as claimed by the applicants.

The Examiner has said that “Swanick discloses a method and apparatus for cleaning internal surface of a component (emphasis added)”. The applicants disagree. The purpose of Swanick is to completely wash out the contents of the shell rather than to flush the internal surfaces. It is therefore not a surface flushing method but rather a contents emptying procedure. The Examiner further states that Swanick “Discloses the installing step, the manifold, and the guide member as claimed”. The applicants again disagree. If Swanick does provide a guide member, it is the vertical tubular shell guides and therefore cannot be reasonably considered to be a “guide member having a plurality of passages formed therein, including adjacent passages that are in a common plane parallel to said first plane and including adjacent passages that are in a common plane other than said first plane and wherein said each of said passages has an axis aligned in coincidence with the respect part opening” as recited in claim 11.

Although the Kenton et al. reference teaches the step of installing a plurality of parts into a fixture, and Buongiorno teaches the advancement of single cleaning tube into a single blade cavity, there is no showing or suggestion in either of the two references, taken individually or in combination, that individual probes be simultaneously advanced by way of a manifold to enter into the respective blades. In fact, Kenton et al. would teach away from that concept since it shows the connection being made by way of hoses.

Again, there is clearly no showing in either the Buongiorno or the Kenton et al. reference, taken individually or in combination, the concept of flushing the inner surfaces of a plurality of cavities in each of a plurality of parts as recited in claim 11.

In addition to the arguments stated hereinabove with respect to the distinctions of claim 11 over the cited references, the further distinguishing features are recited in the dependent claims 12-20. In particular, claims 14 and 15 specifically recite that the probes are of different lengths. In this regard, the Examiner has said that “the references fail to disclose probes are of different lengths”. However, the Examiner goes on to say that “It would have been obvious for one skilled in the art at the time applicant invented the claimed process to utilize different size of dispensing means for the purpose of using the process for different size of components. One would have been

motivated to change the length of the tubes so that they can fit different size of components or tubes and clean the internal surface". In this regard, appellants believe that the Examiner does not appreciate the fact that the different lengths relate to the degree of insertion to the cavities rather than simply relating to different size of components. That is, as stated in paragraph 0020, page 4 of applicant's specification, "As will be seen in Fig. 2, with each probe pair associated with a single turbine blade, one is longer than the other so as to accommodate the required insertion degree". None of the cited references taken individually or in combination show or suggest such a feature. Other features not shown or suggested by the cited references include that of the first plane being substantially normal to said plane other than said first plane as recited in claim 12 and wherein the guide member is integrally formed with the holder as recited in claim 13.

VIII. CONCLUSION

For the reasons discussed hereinabove, the appellants request that the Examiner's rejections of claims be reversed and that the claims be allowed to issue.

Dated: July 11, 2006

Respectfully submitted,

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CLAIMS APPENDIX

11. (Currently Amended) A method of simultaneously flushing the inner surfaces of a plurality of cavities in each of a plurality of parts comprising the steps of:

installing a plurality of parts into a holder in spaced apart relationship in a first plane, with each part having at least a pair of openings and associated internal cavities spaced apart in a plane other than said first plane;

providing a guide member near said part openings said guide member having a plurality of passages formed therein, including adjacent passages that are in a common plane parallel to said first plane and including adjacent passages that are in a common plane other than said first plane and wherein each of said passages has an axis aligned in coincidence with a respective part opening;

providing a manifold opposite said holder with said manifold having a source of high pressure fluid connected thereto and having a plurality of probes extending therefrom with each of said passages having an axis aligned coincident with a respective probe tube axis;

advancing said manifold and said plurality of probes along the axes of said probes such that said probes pass through the respective passages and into respective internal cavities; and

causing high pressure fluid to flow through said probes and into said cavities to flush out any foreign matter that may reside on the inner surfaces thereof.

12. (Currently Amended) A method as set forth in claim 11 wherein said first plane is substantially normal to said plane other than said first plane.

13. (Original) A method as set forth in claim 11 wherein said guide member is integrally formed with said holder.

14. (Original) A method as set forth in claim 11 wherein some of said probes are of different lengths.

15. (Currently Amended) A method as set forth in claim 13 wherein, within any part the probes being advanced thereinto are of different lengths.

16. (Original) A method as set forth in claim 11 wherein said manifold advancing step also includes a further step of retracting said manifold when the flushing has been completed.

17. (Currently Amended) A method as set forth in claim 11 and further including an additional step of removing said holder and replacing it with another holder.

18. (Original) A method as set forth in claim 17 wherein said removing step is accomplished by removing said holder along said first plane.

19. (Original) A method as set forth in claim 11, wherein said parts are gas turbine engine parts.

20. (Original) A method as set forth in claim 19, wherein said gas turbine engine parts comprise turbine blades.

EVIDENCE APPENDIX

Not Applicable.

RELATED PROCEEDINGS APPENDIX

Not Applicable.